PRICING OF REGULATED RETAIL SERVICES IN THE TELECOMMUNICATIONS INDUSTRY

Prepared for the *President's Commission on the United States Postal Service*
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I. Primary Methods for Determining Aggregate Price Levels.

A. Rate-of-Return / Cost-Plus Regulation.

1. Future costs are estimated, often by examining realized costs in a test year.
2. Prices are set to generate revenues equal to estimated (prudently incurred) costs, which include a fair return on capital.
3. Prices are revised, as needed, to ensure that revenues reflect costs.

B. Price Cap Regulation.

1. The ability of firms in the regulated industry to limit cost increases is estimated, and compared to the corresponding ability of firms in other industries. The estimated differential ability of firms in the regulated industry is called the X factor.
2. For a specified time period (often four or five years), prices are permitted to rise, on average, at the economy-wide rate of inflation, less the X factor.
3. The authorized rate of price increase generally is not revised during the specified time period, even if initial forecasts prove to be inaccurate.

C. Alternatives.

1. Rate case moratoria / Rate freezes.
   a. It is agreed that no new rate cases will be initiated for a specified period of time (often two or three years).
   b. Some or all prices may be capped at their initial levels during the moratorium.
2. Earnings sharing.
   a. The firm and its customers share earnings that deviate substantially from target levels.
   b. Often, the firm is permitted to keep all of the earnings it generates within a limited range around the target rate of return (as illustrated in Figure 1).
   c. Sharing (often equal sharing) of incremental earnings occurs over ranges of higher and lower earnings.
   d. Maximum and minimum authorized earnings often are specified (as in Figure 1).
3. Options.
   - Regulated firms are afforded a choice among regulatory plans (e.g, a price cap regulation plan and an earnings sharing plan).

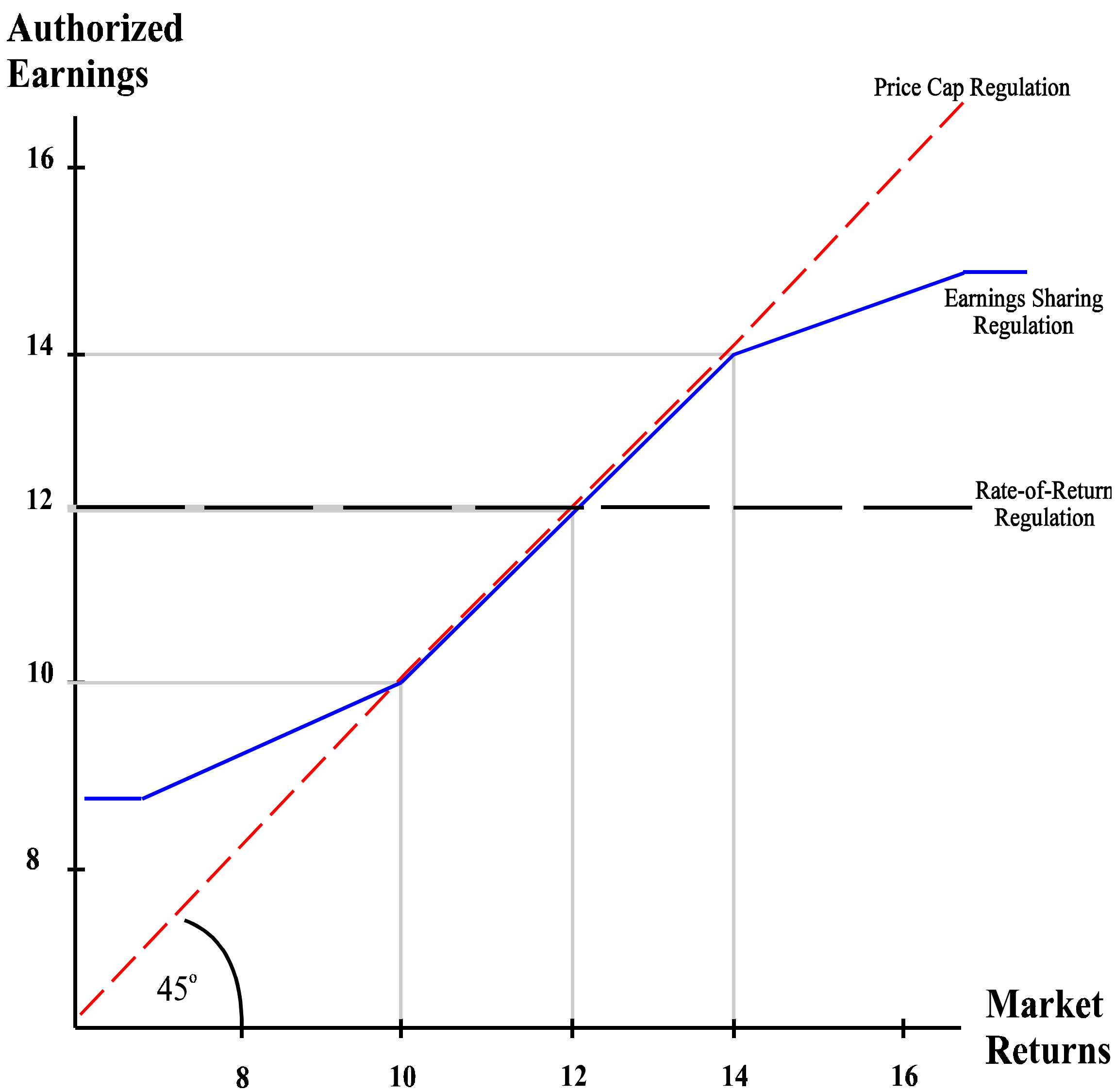

Figure 1. Authorized Earnings Under Three Regulatory Regimes.

II. The Choice of Regulatory Regime in the 50 U.S. States.

Year	Rate of Return Regulation	Rate Case Moratoria	Earnings Sharing Regulation	Price Cap Regulation	Other
1985	50	0	0	0	0
1986	45	5	0	0	0
1987	36	10	3	0	1
1988	35	10	4	0	1
1989	31	10	8	0	1
1990	25	9	14	1	1
1991	21	8	19	1	1
1992	20	6	20	3	1
1993	19	5	22	3	1
1994	22	2	19	6	1
1995	20	3	17	9	1
1996	15	4	5	25	1
1997	13	4	4	28	1
1998	14	3	2	30	1
1999	12	1	1	35	1
2000	8	1	1	39	1
2001	7	1	1	40	1
2002	8	1	1	38	2

Table 1. Number of States Employing the Specified Regulatory Regime.

III. <u>Federal Regulation of Access Charges</u>.

A. <u>Earnings Sharing Options (1991 - 1994)</u>.

1. The Regional Bell Operating Companies (RBOCs) were afforded a choice between two earnings sharing plans.
2. If an RBOC promised more substantial reductions in access charges (which are the prices inter-exchange carriers pay for network access), it was permitted to keep a fraction of realized earnings in excess of target levels over a broader range of earnings.

B. <u>Price Cap / Earnings Sharing Options (1995 - 1997)</u>.

1. The RBOCs were afforded a choice among two (new) earnings sharing plans and a price cap regulation plan.
2. An RBOC that promised to reduce inflation-adjusted access charges by 5.3% annually was authorized to keep all realized earnings. (This was the price cap regulation option).
3. More modest guaranteed reductions in access charges (4.0% or 4.7%) were associated with less generous earnings sharing plans.

C. <u>Price Cap Regulation (1997 - 2000)</u>.

1. The X factor was set at 6.5%.
2. No earnings sharing options were available.

D. <u>CALLS Plan (2001 -)</u>.

1. Price cap regulation with a 6.5% X factor is imposed until access charges reach target levels.
2. Thereafter, the X factor coincides with the realized rate of inflation.

IV. <u>Reasons for Implementing Alternatives to Rate-of-Return Regulation</u>.

A. <u>Declining Costs</u>.

- Regulators wished to deliver to customers in an expedient, low-cost fashion a portion of the cost savings expected to result from substantial reductions in technology costs.

B. <u>Desire to Motivate Cost Reductions</u>.

- The opportunity to share in the financial benefits of improved operations can enhance incentives to improve operations.

C. <u>Emerging Competition</u>.

- Pricing flexibility can enable incumbent producers to respond quickly to the activities of competitors.

V. Rate Structure Design.

A. Rate-of-Return / Cost-Plus Regulation.

1. Residual pricing.
   a. Ancillary services often are priced to generate large contributions to the firm's profit, so as to facilitate lower prices for core services.
   b. Core services are priced ("residually") to ensure the authorized level of earnings.

2. Geographic averaging.
   - Prices often do not reflect cost differences (e.g., similar prices are set for urban and rural customers, despite substantial differences in the costs of serving urban and rural regions).

3. Lifeline rates.
   - Low rates are established for essential services for low-income customers.

B. Price Cap Regulation.

1. Additional restrictions often are imposed on the prices of individual services (e.g., basic local service prices cannot increase during the specified period of price cap regulation).

2. Additional restrictions often are imposed on the prices of distinct groups of services.
   a. Services are placed in distinct baskets (e.g., a basket of residential services and a basket of business services).
   b. Separate, additional pricing restrictions can be imposed on each basket (e.g., the prices of residential services cannot increase, on average, by more than 1% annually).
   c. With separate baskets and basket-specific restrictions, price reductions on one type of service (e.g., business services) do not authorize price increases on another type of service (e.g., residential services).

3. Price floors often are imposed to preclude anti-competitive pricing.

VI. The Impact of Incentive Regulation on the Telecommunications Industry.

A. Network Modernization.

1. Ai and Sappington (2002): More pronounced under "incentive regulation" (IR).
2. Taylor *et al.* (1992): Faster under IR.
3. Greenstein *et al.* (1995): More pronounced under IR.

B. Operating Costs.

1. Ai and Sappington (2002): Lower under IR when competition is pronounced.
2. Shin and Ying (1993): 1% higher under IR.
3. Di Tella and Dyck (2002): Lower in non-review years under IR.

C. Profit.
1. Armstrong *et al.* (1994): Substantially higher under IR after privatization.
2. Ai and Sappington (2002): Little change.

D. Basic Local Service Rates.
1. Ai and Sappington (2002): 4% lower for business customers under PCR.
2. Crandall-Waverman (1995): 10% lower under price cap regulation (PCR).
3. Magura (1998): 17% lower under IR.
4. Braeutigam *et al.* (1997): Significantly lower when so mandated under IR.

E. Intrastate Toll Prices.
1. Kaestner and Kahn (1990): 20% lower under IR.
2. Tardiff and Taylor (1993): 5% lower under IR.
3. Blank *et al.* (1998): 12% higher under IR.

F. Service Quality.
1. Tardiff and Taylor (1993): Little change.
2. Banerjee (2003): Little change.
3. Clements (2001): Some limited decline under IR, absent competition.

G. Total Factor Productivity Growth Rate.
1. Tardiff and Taylor (1993): 2.8% higher under IR.
2. Majumdar (1997): Slightly higher under PCR.
3. Resende (1999): No change.

H. Assessment.
1. Many studies do not control adequately for the effects of competition.
2. There is evidence that competition and incentive regulation together spur reductions in costs and prices, but that the effects of incentive regulation alone often are limited.
3. Some of the effects of incentive regulation on costs, prices, and network modernization are mandated, rather than motivated.

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